

F-COMMERCE AND THE CRUCIAL ROLE OF TRUST

Research-in-Progress

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Abstract

Several studies have identified the crucial role of trust in internet shopping behavior. Technical developments have produced new forms of e-commerce such as commerce through the largest worldwide social network: Shopping on Facebook. Our research investigates the role of trust in facebook-shopping. Our findings show that perceptions of the e-retailer's benevolence and integrity have a stronger impact on trust in facebook-shopping than perceptions of competence and the benevolence and integrity of Facebook itself. Moreover, perceptions of benevolence and integrity of both the e-retailer and Facebook also display a direct effect on purchase intention. Finally, we find significant and positive interaction effects indicating that trust in the e-retailer and trust in Facebook do not independently affect trust in facebook-shopping and purchase intention. Instead, we found that perception of the e-retailer and Facebook complement each other.

Keywords: online social community, trust/online trust, electronic commerce

Introduction

Research in the field of e-commerce has been a familiar topic since the 1990's. Researchers have studied the factors influencing the acceptance of these new technologies (e.g., Davis et al. 1989; Venkatesh and Davis 2000; Venkatesh et al. 2003), the characteristics of online consumers (e.g., Holzwarth et al. 2006; Gefen and Straub 2003; Koufaris 2002; Li et al. 1999; Pavlou 2003), and the determinants of online purchasing behavior (e.g., Gefen et al. 2003; Rodríguez-Ardura et al. 2008; Yoon 2002). Due to the latest technical developments, new forms of e-commerce have emerged. Some online retailers started to include social elements in their online shops where internet users can interact with each other and the provider, while others currently conduct e-commerce through the biggest social network worldwide, Facebook, by using so called Facebook Apps on Facebook Fanpages. This form of e-commerce on Facebook (which we refer to as f-commerce) is the most recent trend and represents an important development of e-commerce. At the moment 660 million users and approximately 30 percent of the Fortune 100 companies engage in Facebook. F-commerce developed quickly and has generated an enormous marketplace within Facebook, one that is being forecasted to reach the size of USD 30 billion worldwide by 2015 (Anderson et al. 2011).

F-commerce uses Facebook's social functions to enable word-of-mouth marketing and to allow users to recommend products to one another. Due to the functions of fanpages, f-commerce takes place in an environment that fulfills the technical necessity of creating a brand community, understood as a specialized and non-geographically bound community of admirers of a brand that share a structured set of social relations (Muniz and O'Guinn 2001). The purchase process differs from regular e-commerce in the following ways: (1) Facebook gathers sensitive data that is usually not available for e-retailers, which might increase consumer's risk perception of the purchase process; (2) the customer is acting in his private life and originally does not intend to purchase anything; and (3), more parties are involved in the provision of the online offer (Facebook + e-retailer), making evaluation of the offering more complex. First, users that are shopping via Facebook experience a greater level of risk since the social network has collected a tremendous amount of sensitive, personal data about the users, their interests, and their social relationships, data that are usually not available to regular online retailers. The collection of private data (especially in the case of Facebook) has been discussed critically in the public dialogue (e.g., Debatin et al. 2009). Since private details might be misused by the social network to sell products, trust plays an even more important role in purchasing context (Fogel and Nehmad 2008). Second, the user who is surfing on Facebook is acting in his private life while being confronted with commercial offers, whereas when shopping at a regular e-retailer, the customer already intends to purchase something or has at least an interest in the assortment (Gefen 2000; Schlosser et al. 2006). Consequently, e-retailers on Facebook want to foster more impulsive buying. Third, the user is buying the product on Facebook and the product is delivered and the payment is operated by the e-retailer; thus, competence, benevolence, and integrity of not only the e-retailer but also of Facebook might be of importance in the purchasing process.

Understanding of the internet user's shopping behavior is essential to understanding whether or not f-commerce is an appropriate strategy for every e-retailer and if every social network will be perceived as an adequate shopping place for internet users. Research in the field of e-commerce exhibits the important role of trust in the provider for online shoppers (e.g., Gefen et al. 2003). Trust can be seen as an essential determinant of transaction behavior on the internet, but it is also interrelated with loyalty and confidence (Gefen 2000; Gefen et al. 2003; McKnight and Chervany 2002). The World Wide Web is still characterized by increasing complexity and uncertainty. Therefore, the question of how users develop trust is at the heart of Information Systems (IS) research. As a consequence, trust in online environments is an important research topic because using new forms of shopping on the Internet (e.g., f-commerce) may be perceived as uncertain, risky, and ambiguous (Bart et al. 2005; Gefen et al. 2008; Holzwarth et al. 2006; Schlosser et al. 2006). With respect to our research, it remains unclear whether trust in the online retailer or trust in the platform (e.g., Facebook) is the major determinant of the internet user's intention to conduct f-commerce. Moreover, it is unclear whether a lack of trust in the provider can be compensated by a higher degree of trust in the platform and vice versa. One might even speculate that the internet user has to trust both platforms to conduct f-commerce (indicating a positive interaction effect). Against this

background, the objective of our study is to examine the role of trust in both the provider of f-commerce and the platform used, and their common impact on an internet user's willingness to buy.

With respect to the theoretical and managerial importance of f-commerce we want to shed some light on this topic by answering the following research questions:

- (1) What role does trust in the provider of f-commerce and the platform play for an internet user's willingness to buy?
- (2) How does trust in the provider of f-commerce and trust in the platform interact with each other (as substitutes or as complements)?

The paper is structured as follows: First, we present its theoretical background and the conceptual model to be developed. Second, we present and discuss our findings and avenues for further research.

Theoretical Background and Conceptual Model

Trust in the E-Retailer

Our conceptual model is based on the trust model for consumer shopping established by Lee and Turban (2001), and we draw on the theoretical frameworks of Mayer et al. (1995) and Schoorman et al. (2007). However, we apply these approaches to shopping on Facebook and extend the existing model by (a) integrating purchase intention as a potential outcome variable, and (b), by deriving potential interaction effects between the different types of trust, which are discussed in literature but have seldom been tested empirically (e.g., it is discussed that interpersonal trust and trust in organizations interact with each other, see Jeffries and Reed 2000).

Trust is the "[...] the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trust or, irrespective of the ability to monitor or control that other party" (Mayer et al. 1995, p. 712). In addition to playing an important role in many business relationships, trust plays a crucial role in e-commerce (Awad and Ragowsky 2008; Gefen et. al. 2003; Jarvenpaa et al. 2000; van der Heijden et. al. 2003). The customer is not able to monitor or control the actions of the e-retailer, actions such as "[...]unfair pricing, violations of privacy, conveying inaccurate information, unauthorized tracking of transactions, and unauthorized use of credit card information" (Gefen et al. 2003, p. 308). Therefore, internet users are faced with a certain risk concerning the outcome of their transactions.

According to the conceptual models of Mayer et al. (1995) and Lee and Turban (2001), three dominant factors influence whether a customer trusts an e-retailer: (1) the perceived benevolence, (2) the perceived integrity, and (3) the perceived competence of the e-retailer. *Benevolence* implies that the e-retailer is not only interested in making profit but also in doing business in a sustainable and satisfactory manner for all parties. The concept *integrity* refers to the consistency principles and honest actions of the e-retailer. The last determinant of trust in this context is *competence*, or the e-retailer's skills and qualifications for operating such an e-business (see especially Lee and Turban 2001; Mayer et al. 1995).

The majority of facebook-shops are related to already existing e-commerce retailers. Against this background we assume that trust in the e-retailer (Kim and Benbasat 2006) is an important determinant of trust levels in facebook-shopping:

H1: *The perceived a) benevolence and integrity as well as the b) competence of the e-retailer have/has a positive impact on trust in facebook-shopping.*

A considerable amount of research studies investigate the impact of trust on purchase intention as well as purchase behavior (e.g., Doney and Cannon 1997; van der Heijden et al. 2003). As already mentioned, especially in online settings, trust plays an essential role. For example, van der Heijden and colleagues (2003) show the indirect effect of trust in online stores on online purchase intention. Therefore, we assume that trust in the e-retailer also has a direct positive effect on purchase intention on Facebook:

H2: *The perceived a) benevolence and integrity, as well as b) the competence of the e-retailer have/has a positive impact on purchase intention on Facebook.*

Trust in Facebook

F-commerce can be defined as commerce in which transactions take place within the Facebook environment/platform. Facebook offers social functions, and contains data on the social relationships of more than 720 million people over the world.¹ Within Facebook it is possible to implement individual applications, including an e-commerce system. As the whole purchase process is taking place within Facebook, it seems obvious that the trust in the platform plays a crucial role for internet user's behavior.

Especially in case of Facebook, users have been concerned about the privacy of data and the use of this information by the provider. Users have to provide personal and real information on their Facebook profile (Dwyer et al. 2007; Fogel and Nehmad 2009). Therefore, privacy issues, which are closely related to trust perceptions, are a prominent topic of discussion and play a major role in the usage behavior of the Facebook members. Since previous research on trust in e-commerce distinguishes between trust in the provider of e-commerce and trust in online shopping, in the case of f-commerce, we differentiate between trust in (1) the provider of e-commerce, (2) trust in the platform (e.g., Facebook), and (3) trust in the type of shopping (facebook-shopping) (e.g., Lee and Turban 2001).

Consistent with the arguments outlined above, we assume that trust in Facebook might enhance trust in facebook-shopping. Facebook-shopping is a risk related action, risks associated with uncertainties about outcomes, data privacy, and the (hidden) actions of the e-retailer (e.g., Lee and Turban 2001). Therefore, we suppose that the level of trust in Facebook has a positive impact on facebook-shopping:

H3: *The perceived a) benevolence and integrity, as well as b) the competence of Facebook have/has positive impact on trust in facebook-shopping.*

Extending previous research, we test the impact of trust in Facebook on purchase intention. As higher levels of trust in a seller are generally connected to higher purchase intentions (Doney and Cannon 1997), this is especially true regarding e-commerce (Liu et al. 2005; van der Heijden et al. 2003; Yoon 2002). Accordingly, we assume that trust in Facebook and trust in facebook-shopping positively impact the purchase intention of internet users:

H4: *The perceived a) benevolence and integrity, as well as b) the competence of Facebook have/has a positive impact on purchase intention on Facebook.*

H5: *Trust in facebook-shopping has a positive impact on purchase intention on Facebook.*

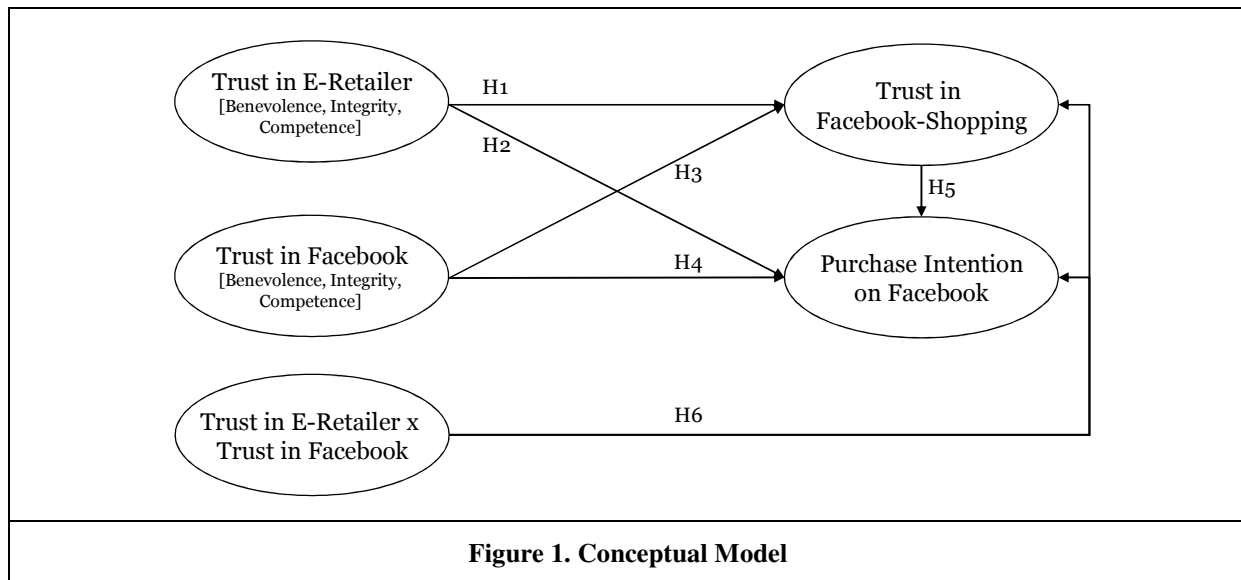
Moderating Effects – Trust in E-Retailer and Facebook

To derive additional practical implications from our study, we analyze whether trust in the retailer and trust in Facebook (positively/negatively) interact with each other and affect trust in facebook-shopping and purchase intention (Jeffries and Reed 2000). A better understanding of the interrelationship between the two types of trust will indicate if f-commerce is an appropriate strategy for every online retailer and if every social network is being perceived as an adequate place to shop for internet users. If both types of trust do not independently affect purchase intention and trust in facebook-shopping, the e-retailer has to carefully evaluate the perceived trustworthiness of both one's own company as well as that of the associated social network. In case of a significant negative interaction effect, a trustworthy provider may compensate for weak trust in the platform and vice versa. Whereas in case of a significant positive interaction effect, both the retailer and the platform have to be perceived as trustworthy lest customers become unwilling to conduct business at all (since they do not care about which of the parties is responsible for failures or misbehavior). Therefore, we assume that:

H6: *There is a (a) positive [(b) negative] interaction effect between trust in e-retailer and trust in Facebook on trust in facebook-shopping and purchase intention.*

Figure 1 summarizes the conceptual model of our research and the hypotheses we test empirically in the following sections.

¹ checkfacebook.com.



Methodology

Data collection procedure and sample

The data for this research was collected in 2011. We established a link on Facebook and invited users to participate in our online survey, producing a total of 219 completed and usable questionnaires. In the collected sample 48 percent of the participants are male and 52 percent are female. The majority of individuals are between the ages of 20 and 30 (78.5%). Our sample is representative in comparison to the total population of Facebook users. About 65 percent of the Facebook users are under the age of 34. We assessed our participants' experiences with social networks and e-commerce. The usage of Facebook was a prerequisite to take part in the study. The majority of participants spent more than two hours per week on Facebook (59.4%) and 29.7 percent use Facebook for more than four hours per week. All participants indicated experience with e-commerce. While 44.3 percent of the participants have already bought goods over the internet at least ten times, about one fourth (26.5 %) report having bought goods over the internet more than 50 times. We chose a leading e-retailer on Facebook out of the segment of consumer durables, and used pictures representing the purchase process within its Facebook shop to give all study participants the same impression of the facebook-shopping environment before they had to answer the online survey questions.

Measures and Measurement properties

We employed well established multi-item measures for our research that have been tested in previous empirical studies. More specifically, our model consists of six exogenous and two endogenous variables. The endogenous variables are measured as follows: purchase intention (Chen and Barns 2007) and trust in facebook-shopping (Lee and Turban 2001). The measures for the exogenous variables, trust in e-retailer (benevolence, integrity, and competence) and trust in Facebook (benevolence, integrity, and competence), are based on McKnight et al. (2002) and Lee and Turban (2001).

We used multi-item five-point Likert scales anchored by 1 = "strongly disagree" and 5 = "strongly agree". Exploratory factor analysis and tests of discriminant validity indicated that Facebook shoppers do not differentiate between benevolence and integrity (of the e-retailer and the platform). Therefore, we have merged these two sub-dimensions of trust. Next we assessed the reliability of measurement for the latent constructs using confirmatory factor analysis. Table 1 provides an overview of the psychometric properties of the measures (see appendix for construct measures).

Table 1. Reliability and Validity of the Constructs			
	Alpha	CR	AVE
Endogenous variables			
Purchase intention	.82	.90	.76
Trust in facebook-shopping	.81	.88	.64
Exogenous variables			
Trust in e-retailer			
- benevolence and integrity	.87	.90	.62
- competence	.86	.91	.78
Trust in Facebook			
- benevolence and integrity	.91	.94	.71
- competence	.76	.85	.58

The alpha coefficients for the exogenous and the endogenous constructs are larger than .7, exceeding the threshold generally proposed in the literature (Nunnally 1978). Also, composite reliabilities (CR) are larger than .6 for all constructs (Bagozzi and Yi 1988). Discriminant validity was assessed using the criterion proposed by Fornell and Larcker (1981). The criterion was met, since the average variance extracted (AVE) by each construct exceeds the squared correlations between all pairs of constructs (Table 2). Therefore, reliability and validity of the constructs in this study are within acceptable boundaries.

Table 2. Squared Correlations between the Latent Constructs					
Construct	1.	2.	3.	4.	5.
1. Purchase intention	1				
2. Trust in facebook-shopping	.39	1			
3. Trust in e-retailer: benevolence and integrity	.21	.23	1		
4. Trust in e-retailer: competence	.12	.13	.25	1	
5. Trust in Facebook: benevolence and integrity	.17	.13	.15	.06	1
6. Trust in Facebook: competence	.13	.10	.10	.10	.14
AVE	.76	.64	.62	.78	.58

Results

We used structural equation modeling (Mplus 3.11) to test the hypothesized effects. The model fits the data well. The Comparative-Fit-Index (CFI) is .91, the Tucker-Lewis-Index (TLI) is .90, the Root Mean Square Error of Approximation (RMSEA) is .06, and the Standardized Root Mean Square Residual (SRMR) is .07. As can be seen from table 3, we find a significant positive effect of benevolence and integrity of the e-retailer ($\lambda = .34$ with $p < .01$), of competence of Facebook ($\lambda = .18$ with $p < .05$), and a marginal significant effect of benevolence and integrity of Facebook ($\lambda = .14$ with $p < .1$) on trust in facebook-shopping, supporting H1a, H3a and H3b. We do not find a significant effect for competence of the e-retailer (H1b). With respect to purchase intention, we find that benevolence and integrity of the e-retailer (H2a; $\lambda = .14$ with $p < .1$), and benevolence and integrity of Facebook ($\lambda = .16$ with $p < .05$) display significant effects supporting H2a and H4a. Competence of the e-retailer (H2b) and competence of Facebook (H4b) are not significant. Moreover, we find a significant positive effect of trust in facebook-shopping on purchase intention ($\lambda = .45$ with $p < .01$), supporting H5. A total of 35 percent of the variance

of facebook-shopping and 50 percent of the variance of purchase intention are explained by the examined variables.

Table 3. Results of Structural Equation Modeling with Direct an Moderating Effects			
Dependent variable	Independent variable	λ	p
Trust in facebook-shopping $R^2 = .35$	← Trust in e-retailer: benevolence and integrity (H1a)	.34	$p < .01$
	← Trust in e-retailer: competence (H1b)	.10	n.s.
	← Trust in Facebook: benevolence and integrity (H3a)	.14	$p < .1$
	← Trust in Facebook: competence (H3b)	.18	$p < .05$
	Moderator variable (H6a-b)		
	← E-retailer : b. and i. x Facebook: b. and i.	.15	$p < .05$
	← E-retailer : b. and i. x Facebook: competence	-.09	n.s.
	← E-retailer : competence x Facebook: b. and i.	.08	n.s.
	← E-retailer : competence x Facebook: competence	-.03	n.s.
	Independent variable		
Purchase intention $R^2 = .50$	← Trust in e-retailer : benevolence and integrity (H2a)	.14	$p < .1$
	← Trust in e-retailer: competence (H2b)	.04	n.s.
	← Trust in Facebook: benevolence and integrity (H4a)	.16	$p < .05$
	← Trust in Facebook: competence (H4b)	.12	n.s.
	← Trust in facebook-shopping (H5)	.45	$p < .01$
	Moderator variable (H6a-b)		
	← E-retailer : b. and i. x Facebook: b. and i.	-.02	n.s.
	← E-retailer : b. and i. x Facebook: competence	-.02	n.s.
	← E-retailer : competence x Facebook: b. and i.	.19	$p < .05$
	← E-retailer : competence x Facebook: competence	.01	n.s.

In order to test the interaction effects proposed by hypotheses H6a-b, we included additional product terms in our structural equation model (we employed a consecutive as well as parallel test of the four interaction terms; both tests exhibit the same findings). We built these interaction factors by (separately) multiplying and mean-centering the four variables: trust in e-retailer (benevolence and integrity, competence) and trust in Facebook (benevolence and integrity, competence). Results of these tests indicate that two interaction effects have significant positive effects on trust in facebook-shopping ($\lambda = .15$ with $p < .05$) as well as purchase intention ($\lambda = .19$ with $p < .05$). Hence, our results partially support H6a while H6b has to be rejected (see table 3).

Discussion, Implications and Further Research

Discussion and Implications

This study examined the role of trust in f-commerce, given that trust has been identified as an especially important factor under conditions of uncertainty and risk. Our preliminary results indicate that f-commerce is more complex than e-commerce since more parties are involved in providing the offer. From perspective of the user, not only is trust in the e-retailer of importance but also trust in the social platform. More specifically, we examined the role of trust in the e-retailer offering f-commerce, trust in

the chosen platform (e.g., Facebook), and their common impact on a shopper's willingness to buy via facebook-shopping. Our study indicates that perceptions of the e-retailer's benevolence and integrity have a stronger impact on trust in facebook-shopping than perceptions of the competence, and benevolence and integrity of Facebook. Moreover, perceptions of benevolence and integrity of the e-retailer and Facebook also display a direct effect on purchase intention. Examining the total effects, benevolence and integrity of the platform are less important compared to the benevolence and integrity of the e-retailer. Moreover, we found neither competence of the e-retailer nor competence of Facebook to affect purchase intention directly. These findings indicate that the diverse dimensions of trust differ in their relevance for f-commerce. One might speculate that shoppers assume both the e-retailer and Facebook are competent enough to handle facebook-shopping while some shoppers are skeptical about the e-retailer's and Facebook's benevolence and integrity. Finally, we found significant and positive interaction effects indicating that trust in the e-retailer and trust in Facebook do not independently affect trust in facebook-shopping and purchase intention. Instead we found that perception of the e-retailer and Facebook complement each other, which is an effect that has been assumed by previous studies but has not been empirically tested before. Insufficient trust in the e-retailer can indeed be compensated by a high level of trust in the platform and vice versa. Therefore, in contrast to traditional e-commerce, the purchase decision is strongly affected not only by trust perceptions of the e-retailer and of the platform the e-retailer but also by the platform.

Our findings have several preliminary implications: First, they indicate that online retailers intending to initiate f-commerce and participate in this growing market have to be perceived as benevolent and as having integrity by Facebook users, while perceptions of the e-retailer's competence are less important. Online retailers may improve their brand images by clearly communicating company policies to the users, especially when it comes to the handling of customer relationships. This should be guided by a consistent set of principles (e.g., privacy protection principles and consumer protection principles) that are visible to consumers. Second, with respect to the platform, our study revealed that not every social network is attractive for conducting "f-commerce" since perceptions of benevolence and integrity of the chosen platform influence the success of the online e-retailer. The retailer also has to communicate how the social network deals with customer data and the privacy concerns of its users. Facebook in particular has been criticized for careless handling of customer data, a condition that could hinder f-commerce. The perceived competence of Facebook was found to indirectly affect success of facebook-shopping. Third, since we found positive interaction effects, the online retailer may prompt f-commerce by improving not only its own image as trustworthy but also by improving the image of Facebook (or choosing a platform with a positive image).

Further Research

Against the background of 'research in progress', our study has some limitations and several unanswered questions that suggest avenues for further research. First, besides trust in the e-retailer and in the platform, findings from research of traditional e-commerce (such as reputation of the e-retailer or the platform) may be relevant to the success of f-commerce. Besides perceptions of trust, shoppers might be interested in the quality and convenience of the platform as well as its competitiveness. Second, the Facebook users who we examined are largely between the ages of 18 to 34, and our findings are valid for this group of users. Nonetheless, further research might examine older groups of users and silver surfers who are active on Facebook. Third, we examined Facebook since this platform is leading in terms of online shopping. We also chose a specific e-retailer that is also leading in F-commerce to ensure that we would find at least 219 users of F-commerce. The results might differ (trust could be an even stronger predictor) when the platform and the e-retailer are less well known. Therefore, it is worth examining firms that are new to the market or new to the domain of f-commerce. These additional research steps could enable our results to be generalized to further contexts. For instance, researchers may use the chance to explore shopping opportunities on Google+, a platform still in its early stage of development. Similar to Facebook, Google has been criticized in public discourse for the use of private data, thus making trust an issue of major importance. We encourage researchers to continue exploration of these interesting avenues of inquiry.

Appendix

Items for Construct Measures
<i>Endogenous variables</i>
Purchase intention
I intend to use a Facebook store for purchasing a product or service in future.
I would strongly recommend others to use a Facebook store.
I shall not transact with a Facebook store in the near future.
Trust in facebook-shopping
Facebook shopping is unreliable.
Facebook shopping cannot be trusted, there are too many uncertainties.
In general, I cannot rely on Facebook vendors to keep the promises that they make.
Anyone trusting Facebook shopping is asking for trouble.
<i>Exogenous variables</i>
Trust in e-retailer
- benevolence and integrity
I believe that the e-retailer would act in my best interest.
If I required help, the e-retailer would do its best to help me.
The e-retailer is truthful in its dealings with me.
I would characterize the e-retailer as honest.
The e-retailer would keep its commitments.
The e-retailer is sincere and genuine.
- competence
The e-retailer has the ability to handle sales transactions on the Internet.
The e-retailer has sufficient expertise and resources to do business on the Internet.
The e-retailer has adequate knowledge to manage its business on the Internet.
Trust in Facebook
- benevolence and integrity
I believe that Facebook would act in my best interest.
If I required help, Facebook would do its best to help me.
Facebook is truthful in its dealings with me.
I would characterize Facebook as honest.
Facebook would keep its commitments.
Facebook is sincere and genuine.
- competence
Facebook makes the maintenance of social contacts possible.
Facebook has sufficient expertise and resources to ensure the accessibility of its online platform.
Facebook has adequate knowledge to manage its business on the Internet.
Facebook runs a social media platform with a good reputation.

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